AMENDMENTS TO THE DRAWINGS

Please find enclosed replacement sheets for Figures 1 and 2. As requested by the Examiner, Figures 1 and 2 have been amended to designate them as prior art figures.

REMARKS

Claims 1-22 are pending in the application.

Claims 1-5, 7-11, and 18-22 have been rejected.

Claims 6 and 12-17 have been objected to.

Claims 1, 3, 6-8, 14, 15, 17, 19, and 22 have been amended, as set forth herein.

Claim 2 has been canceled.

New Claims 23-28 have been added. New Claims 23-28 are simply Claims 3 and 6 (along with their dependent claims) rewritten in independent form including all the limitations of the base and any intervening claims as suggested by the Examiner. The Applicants respectfully submit that no new matter is being added with the new claims and respectfully request the entry and allowance of the new claims.

Claims 1 and 3-22 remain pending in the application.

I. DRAWINGS

Figures 1 and 2 were objected to by the Examiner as not being designated by a legend such as Prior Art. By the enclosed replacement sheets, the Applicants have amended Figures 1 and 2 to include the legend Prior Art. Accordingly, the Applicants respectfully request that the objection to Figures 1 and 2 be withdrawn.

II. CLAIM OBJECTIONS

Claims 1-9 and 14-17 were objected to because of various informalities. The Applicants have amended these claims as requested by the Examiner. Accordingly, the Applicants respectfully request that the objection to these claims be withdrawn.

III. CLAIM REJECTIONS UNDER 35 U.S.C. § 112

Claims 2-5, 7, 8, and 19-22 were rejected under 35 U.S.C. § 112, second paragraph. The Applicants have amended these claims to overcome this rejection. Accordingly, the Applicants respectfully request that the rejection of these claims under 35 U.S.C. § 112, second paragraph, be withdrawn.

IV. CLAIM REJECTIONS – DOUBLE PATENTING

Claims 1 and 9 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 17 of copending Application No. 10/540,791.

The provisional double-patenting rejection of these claims is noted. The Applicants will address this issue at such time as the '791 application issues, and the actual differences between the issued claims and the claims in the present application can be analyzed.

V. REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 2, 9-11, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art ("APA") in view of Li (U.S. Patent No. 7,130,365) and Petrus (U.S. Patent No. 6,177,906). The rejection is respectfully traversed.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art ("APA") in view of Li (U.S. Patent No. 7,130,365). The rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d

1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142. In making a rejection, the examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), *viz.*, (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. In addition to these factual determinations, the examiner must also provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir 2006) (cited with approval in *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007)).

The Applicants respectfully submit that the combination of cited references fails to teach or suggest all the claim limitations of amended Claim 1. Specifically, Claim 1 has been amended to

recite, "wherein said baseband processing module provides said control information to said smart antenna processing module according to data outputted from one of the plurality of groups of radio frequency signal processing modules before said smart antenna processing module is enabled."

The Office Action appears to suggest that Col. 12, lines 8-10 of Petrus discloses this element of Claim 1. However, the cited section of Petrus describes decision directed methods that utilize a signal copy operation to determine the correct weights. Specifically, Col. 11, lines 52-54 of Petrus states:

> Rapidly converging methods such as decision directed methods, unlike partial property restoral methods, converge very fast. With a decision directed method, the property restored is a complete replica of the originally transmitted signal that has the correct modulation scheme. That is, a signal copy operation, such as Eq. (1), estimates a received signal, and that signal is demodulated and a reference signal with the correct bit stream is constructed. To work well, one needs to correct for any frequency and timing offsets when constructing the reference signal. The correct weights are those that produce a reference signal that is close to the transmitted signal. The scheme may involve one or more iterations to achieve the "best" weights.

Figure 6 of Petrus also cited in the Office Action shows both signals from both receiving blocks 122 going into signal copy operation 607, not a single signal from a single receiving block 122 as suggested in the Office Action. Furthermore, Col. 18, lines 18-30 states:

> FIG. 6 shows the block diagram of the preferred embodiment multi-port adaptive smart antenna processing apparatus. In each port, **the oversampled outputs 605 of receivers 122 from the antenna elements 103 are combined in a signal copy operation 607**, initially using an initial weight vector 631-i, i=1, . . . , N_S for the first, . . . , N_Sth port, respectively, these initial weights provided by a weight initializer 621. The resulting copy signal is timing offset corrected by timing offset corrector unit 609 which also decimates/interpolates to produce a set of approximately baud-aligned samples (for the CM method iterations) or substantially baud-aligned samples (for the decision directed method iteration(s)) baud-aligned samples. (Emphasis added by the Applicants.)

Therefore, the resulting copy signal is a **combination** of the oversampled outputs 605 from receivers 122, not a single signal from a single receiver 122. As such, the correct or best weights are based

upon a combination of signals from two or more receivers not from data outputted from one of the plurality of groups of radio frequency signal processing modules as recited in Claim 1.

In distinct contrast, Paragraphs [0048] and [0057] of the Applicants' published application state:

> [0048] Firstly, the smart antenna baseband processing is disabled in SA module 306. At this time SA module can receive signals from single-channel RF signal processing module, i.e. SA module 306 can be regarded as a through path to signals from :o single-channel RF signal processing module. Then baseband physical layer processing module 303 first obtains DwPTS and user-specific midamble of signals inputted from single-channel RF signal processing module after the connection between the mobile phone and base station is established.
>
> [0057] 1. In the above step 1, SA module is disabled at the first beginning, and it starts to work by data-driving only when receiving SA control commands via the data bus in step 2, wherein the SA commands include synchronization information for synchronizing the inputted signals, such as DwPTS, user-specific midamble, signals for enabling SA module and selecting the weight algorithm. That is to say, the synchronization information is obtained before SA module starts to work, therefore SA module can reuse the synchronization function of baseband physical layer processing module 303, and conflicts won't be caused.

The Applicants respectfully submit that the combination of cited references fails to teach or suggest "wherein said baseband processing module provides said control information to said smart antenna processing module according to data outputted from one of the plurality of groups of radio frequency signal processing modules before said smart antenna processing module is enabled."

Thus, the Applicants respectfully that Claim 1 is patentable over the combination of cited references.

Independent Claims 10 and 22 recite limitations analogous to the novel limitations emphasized above in traversing the rejection of Claim 1 and, therefore, also are patentable over the combination of cited references.

Accordingly, the Applicants respectfully request withdrawal of the § 103(a) rejections of Claims 1, 2, 9-11, 18, and 22.

VI. ALLOWABLE SUBJECT MATTER

The Examiner indicated that Claim 19 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, set forth in the Office Action. The Applicants have amended Claim 19 to overcome the 35 U.S.C. § 112, second paragraph, rejection. Accordingly, the Applicants respectfully request allowance of Claim 19 along with its dependent Claims 20 and 21.

The Examiner objected to Claims 3-8 and 12-17 as being dependent upon a rejected base claim, but suggested that Claims 3-8 and 12-17 would be allowable if rewritten in independent form including all the limitations of the base and intervening claims. The Applicants thank the Examiner for this indication of allowability and have rewritten Claims 3 and 6 (along with their dependent claims) as suggested by the Examiner as new Claims 23-28. The Applicants respectfully request allowance of new Claims 23-28.

VII. CONCLUSION

As a result of the foregoing, the Applicant asserts that the remaining Claims in the Application are in condition for allowance, and respectfully requests an early allowance of such Claims.

Should it facilitate allowance of the application, the Examiner is invited to telephone the undersigned attorney. The Commissioner is hereby authorized to charge any additional payment that may be due or credit any overpayment to Munck Carter Deposit Account No. 50-0208.

Respectfully submitted,

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